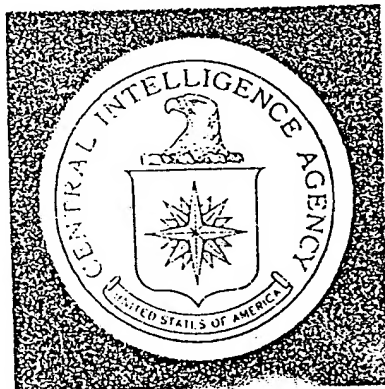


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1998



DIRECTOR
CENTRAL INTELLIGENCE AGENCY

Intelligence Handbook

*Soviet Strategic Weapons:
Background for SALT*

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SR IH 69-4
October 1969

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
October 1969

Soviet Strategic Weapons: Background for SALT

Introduction

This handbook describes major Soviet strategic weapon systems which are of possible interest to the US delegation to strategic arms limitation talks (SALT). The information is for background use only and is not intended for direct introduction into discussions with the Soviets. Guidance on what may be discussed is available in the CIA memorandum *Intelligence Guidance for US Delegation to Strategic Arms Limitation Talks*. Background information on other weapon systems will be provided through the intelligence adviser for SALT.

The weapon systems described include guided missiles as well as missile-carrying submarines and strategic bombers. The characteristics, performance, and operational status of each system are briefly summarized. Special terms used in the descriptions are defined on the next page.

This handbook was produced solely by CIA. It was prepared by the Office of Strategic Research and coordinated with the Office of Scientific Intelligence and the Foreign Missile and Space Analysis Center.

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Special Terms

Missiles

The data given for each missile include the year of its initial operational capability (IOC). By this date the first operational unit has been trained and equipped with a few weapons of the given type.

Circular error probability (CEP) indicates the accuracy of the weapon system, stated as the radius of a circle centered on the target. Statistically, half of all arriving warheads would impact within this circle.

Bombers

The combat ceiling indicated for each bomber is the greatest altitude at which the aircraft can continue to climb at the rate of 500 feet per minute, i.e. can maneuver effectively.

Radius is the maximum distance the bomber can cover to an objective allowing for return flight to the same base without refueling. This figure is reduced on missions in which tactical or other considerations require flight under less than ideal conditions.

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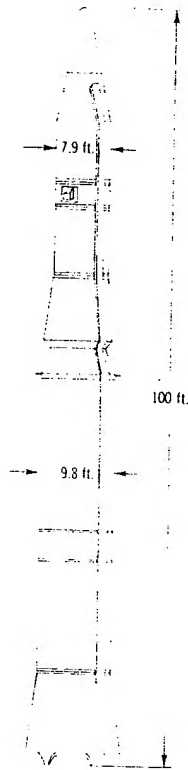
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Intercontinental Ballistic Missile

SS-7 Saddler



IOC	1962
Configuration	2-stage tandem
Propellant	storable liquid
Launch weight	325,000 lbs
Re-entry vehicle	3,500 ± 500 lbs
	4,200 ± 500 lbs*
Warhead (nuclear)	2,800 ± 400 lbs
	3,300 ± 400 lbs*
Maximum range	6,500 nm
	5,500 nm*
Guidance	inertial
CEP	1.0-1.25 nm

*Two operational re-entry vehicles

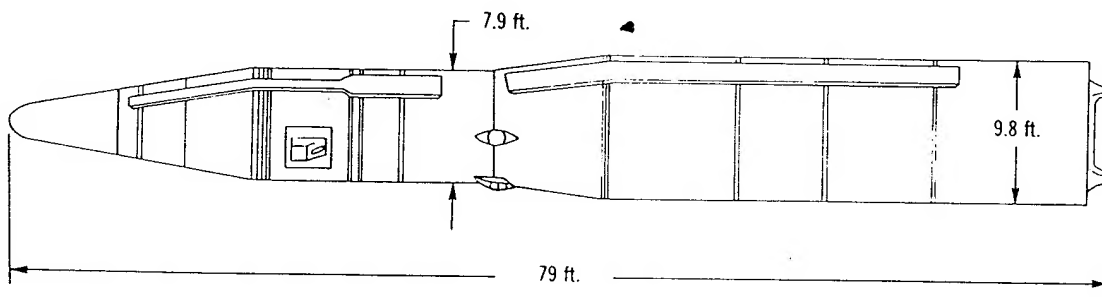
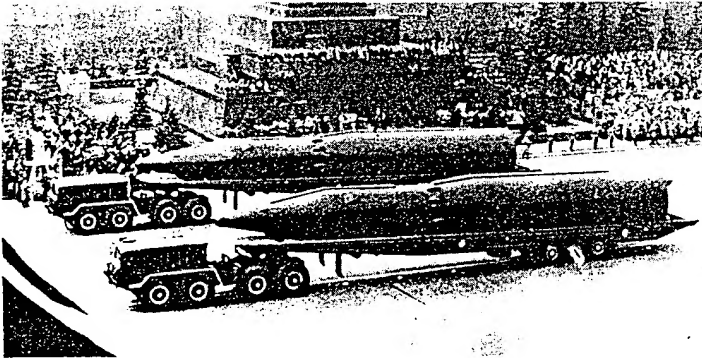
First Soviet ICBM to be widely deployed. First flight test in October 1960.

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Intercontinental Ballistic Missile

SS-8 Sasin



IOC	1963
Configuration	2-stage tandem
Propellant	nonstorable liquid
Launch weight	165,000 lbs
Re-entry vehicle	3,500 ± 500 lbs
Warhead (nuclear)	2,800 ± 400 lbs
Maximum range	6,000 nm
Guidance	radio-inertial
CEP	1 nm

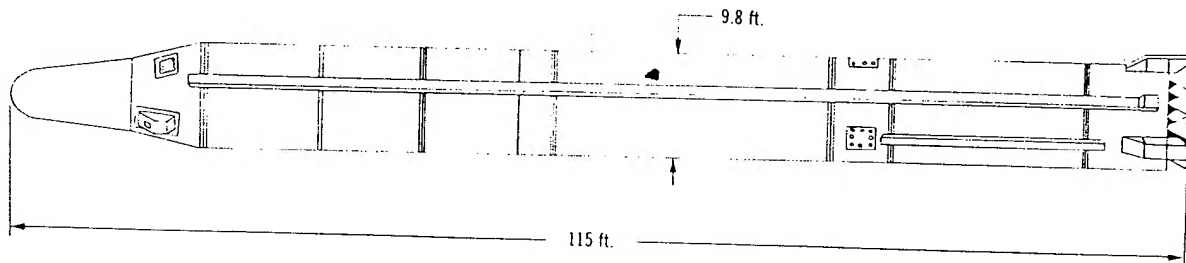
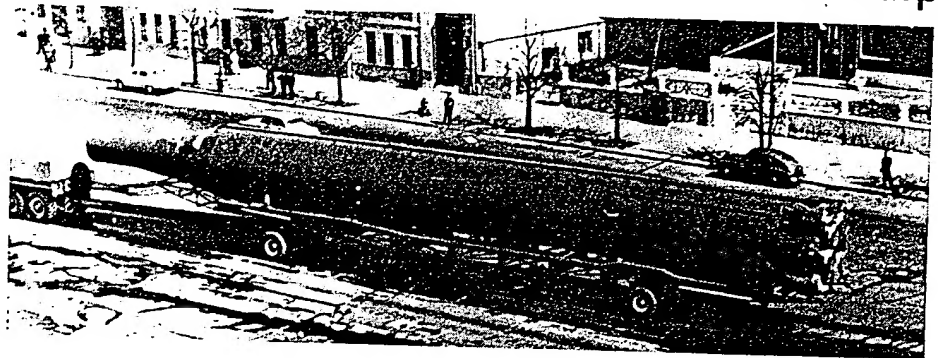
Probably given only limited deployment. First publicly displayed in Moscow parade of November 1964. First flight test in April 1961.

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Intercontinental Ballistic Missile

SS-9 Scarp



IOC	1966
Configuration	2-stage tandem
Propellant	storable liquid
Launch weight	400,000 lbs
Re-entry vehicle	10,000 ± 500-1,000 lbs
	13,500 ± 500-1,000 lbs*
Warhead (nuclear)	8,000 ± 1,000 lbs
	11,000 ± 1,000 lbs*
Maximum range	7,000 nm
	5,000 nm*
	(possibly 5,400 nm)
CEP	0.5-0.75 nm
Guidance	inertial with radio-
	inertial capability

* Two operational re-entry vehicles

Largest and most accurate Soviet ICBM. Extensively deployed in USSR. First displayed in Moscow parade of November 1967. First flight test in December 1963. Also employed as launch vehicle for SS-X-6 and maneuverable satellites.

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Depressed Trajectory
Intercontinental Ballistic Missile

SS-X-6

Configuration	2-stage and deboost
Propellant	storable liquid
Launch weight	400,000 lbs
Re-entry vehicle	about 4,000 lbs
Warhead (nuclear)	about 3,200 lbs
Maximum range	about 6,000 nm
Guidance	inertial
CEP	1-2 nm

SS-X-6 weapon system is composed of SS-9 ICBM and deboost stage with warhead. First flight test in December 1965. Operational status undetermined. As DICBM, SS-X-6 in its current configuration is capable of striking US.

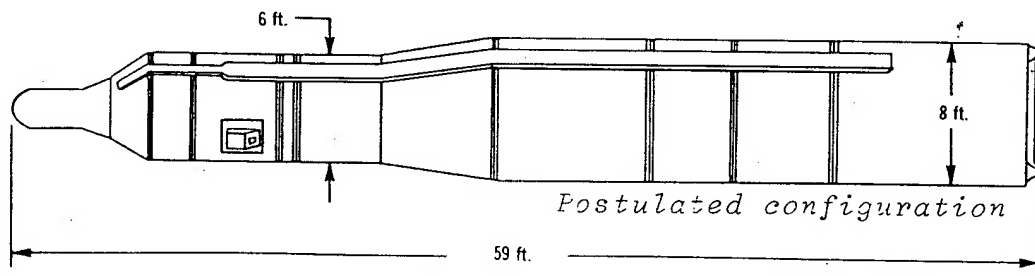
May also be used as fractional orbit bombardment system (FOBS) which places warhead in low earth orbit about 100 miles high. Deorbit engine kicks warhead out of orbit toward target before weapon has completed one revolution of earth. System lacks necessary energy to make it effective orbital weapon against US. Major changes in either warhead size or booster are necessary.

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Intercontinental Ballistic Missile

SS-11



IOC	1966
Configuration	2-stage tandem
Propellant	storable liquid
Launch weight	95,000 lbs
Re-entry vehicle	1,500 ± 300 lbs
Warhead (nuclear)	1,200 ± 300 lbs
Maximum range	5,500 nm
Guidance	inertial
CEP	1.0 nm

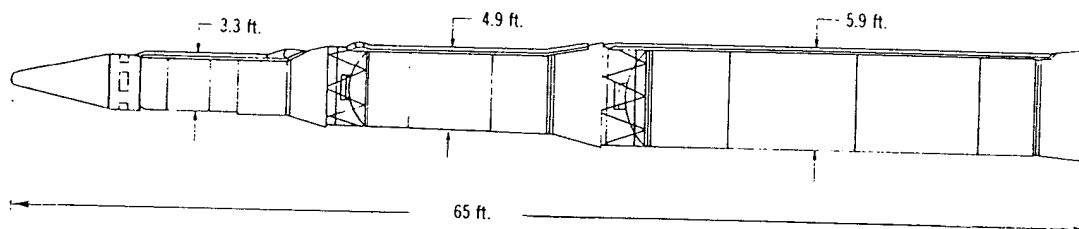
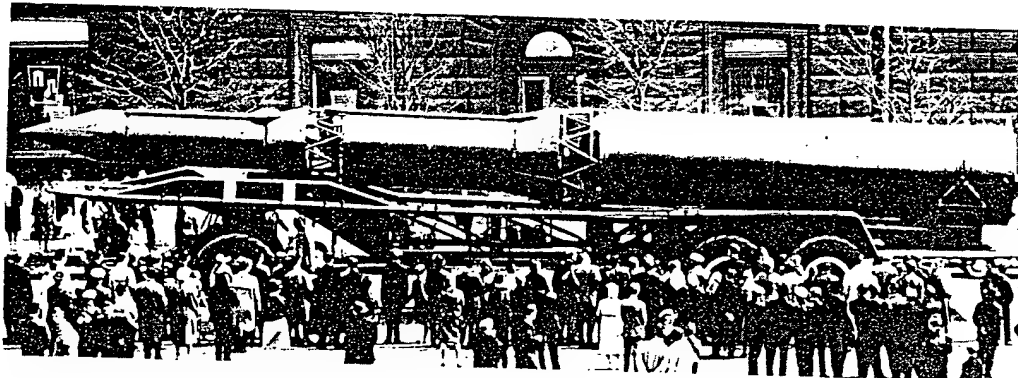
Smallest Soviet ICBM tested to date. Deployed extensively throughout USSR. Never publicly displayed. First flight test in April 1965.

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Intercontinental Ballistic Missile

SS-13 Savage



IOC	1969
Configuration	3-stage tandem
Propellant	solid
Launch weight	105,000 lbs
Re-entry vehicle	about 1,000 lbs
Warhead (nuclear)	about 750 lbs
Maximum range	about 5,000 nm
Guidance	inertial
CEP	1.0-1.5 nm

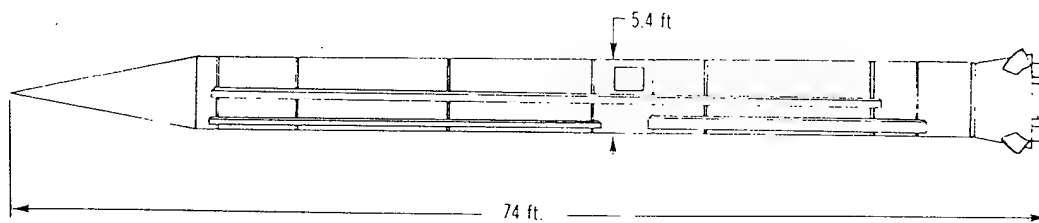
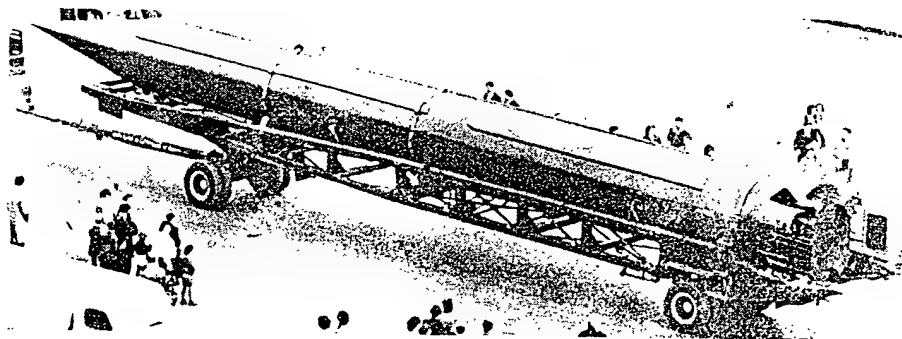
Estimated to become operational in fixed sites in 1969. First flight test in November 1965. First publicly displayed in Moscow parade of May 1965.

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Medium-Range Ballistic Missile

SS-4 Sandal



IOC	1958
Configuration	single stage
Propellant	storable liquid
Launch weight	88,000 lbs
Re-entry vehicle	3,300 \pm 500 lbs
Warhead (nuclear)	2,200 \pm 500 lbs
Maximum range	1,020 nm
Guidance	inertial
CEP	1.25 nm

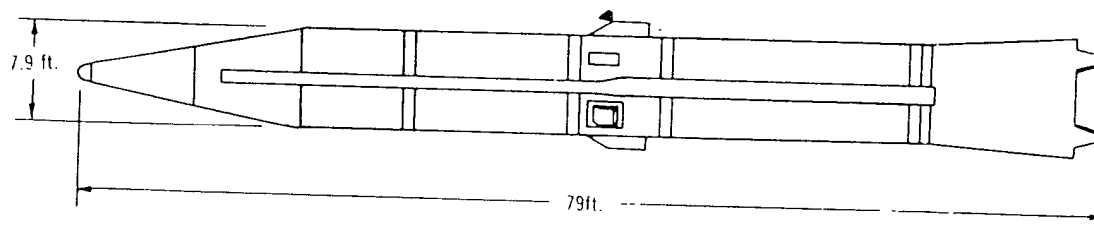
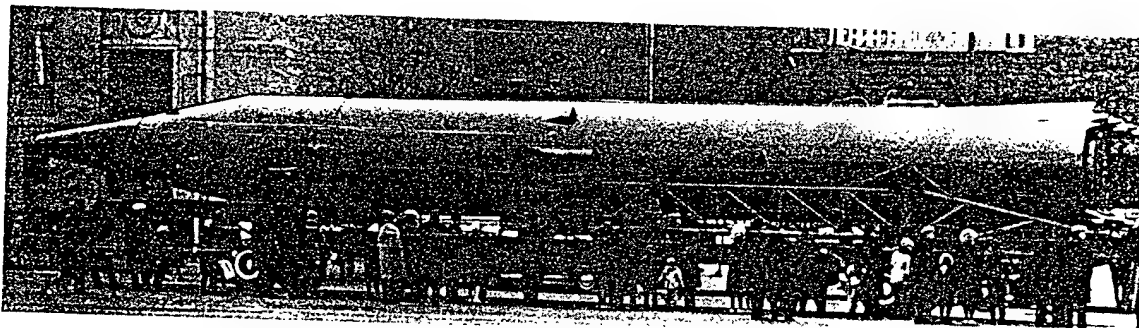
Deployed in both soft and hard sites located primarily in the European USSR. First publicly displayed in Moscow parade of November 1960. First flight test in June 1957. Much larger conventional warhead could be delivered to shorter ranges, e.g. about 4,000 lbs to 800 nm.

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Intermediate-Range Ballistic Missile

SS-5 Slean



IOC	1961
Configuration	single stage
Propellant	storable liquid
Launch weight	about 200,000 lbs
Re-entry weight	3,500 ± 500 lbs
Warhead (nuclear)	2,800 ± 400 lbs
Maximum range	2,200 nm
Guidance	inertial
CEP	0.5-0.75 nm

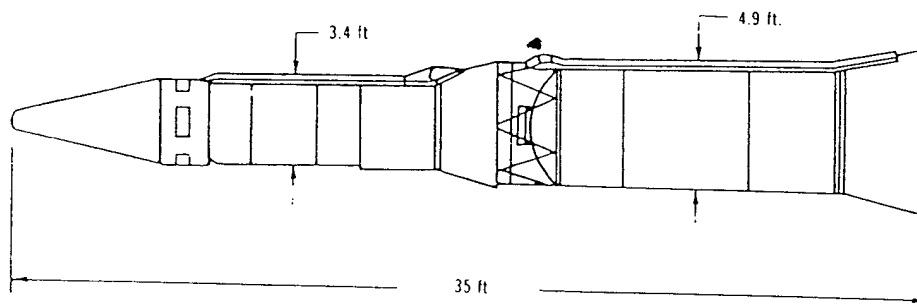
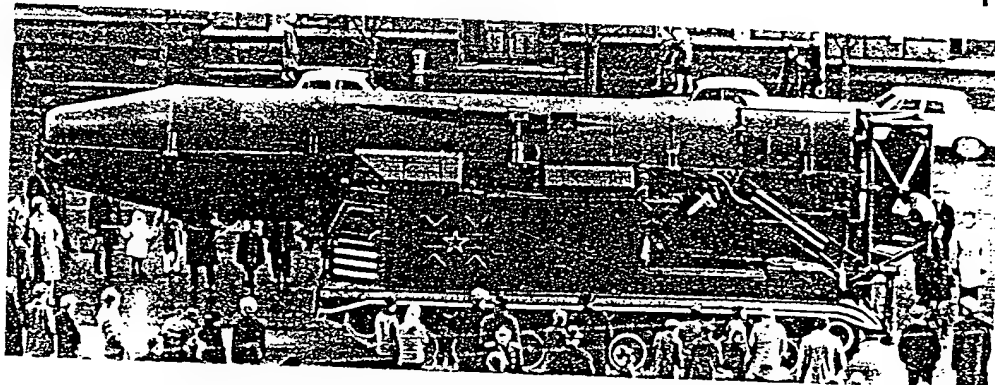
Deployed in both hard and soft sites located primarily in European USSR. First publicly displayed in Moscow parade of November 1964. First flight test in June 1960. Much larger conventional warhead could be delivered to shorter ranges, e.g. 8,000 lbs to 1,500 nm.

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Intermediate-Range Ballistic Missile

SS-14 Scamp



IOC	1970
Configuration	2-stage tandem
Propellant	solid
Launch weight	about 35,000 lbs
Re-entry vehicle	1,200 ± 300 lbs
Warhead (nuclear)	900 ± 200 lbs
Maximum range	about 1,500 nm
Guidance	inertial
CEP	0.5-1.5 nm

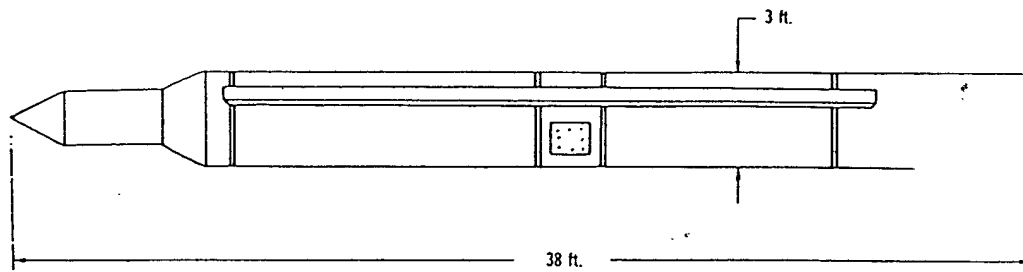
Transporter-launcher first displayed in Moscow parade of May 1965. SS-14 missile first shown in November 1967. First flight test in September 1965. Probably will be deployed both in fixed sites and mobile launchers. Consists of second and third stages of SS-13 Savage.

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Short-Range Ballistic Missile

SS-12 Scaleboard



IOC	1965
Configuration	
Launch weight	1,200 lbs
Warhead (HE, nuclear)	1,200 lbs
Maximum range	500 nm
Guidance	inertial
CEP	0.25-0.5 nm

A mobile system designed to fill gap between 150-mile and 1,000-mile systems. Flight testing began in March 1964. May be deployed with front ground forces to provide coverage of battle zone.



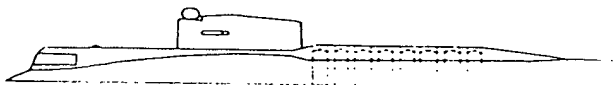
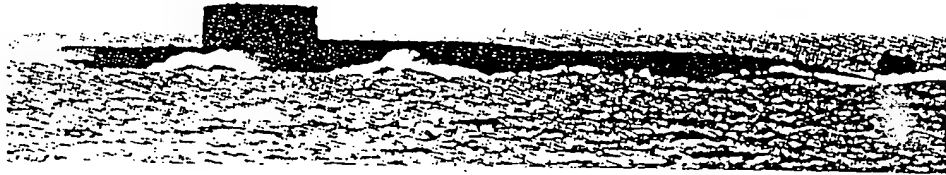
SS-12 probably is associated with Scaleboard mobile system (photograph) first displayed in November 1967.

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Nuclear Powered Ballistic Missile Submarine - SSBN

Y Class



Initial construction	1967
Date first unit operational	1968
Complement	about 100
Length	425 ft
Beam	38 ft
Displacement,	
surfaced	7,200 tons
submerged	8,700 tons
Propulsion	nuclear
Operating depth,	
normal	1,300 ft
collapse	2,000 ft
Submerged speed,	
maximum	about 25 kts
Patrol radius,	
0 days on station	8,600 nm
20 days on station	5,800 nm
Patrol duration	60 days
Missiles	16 SS-N-6s
Torpedoes	32

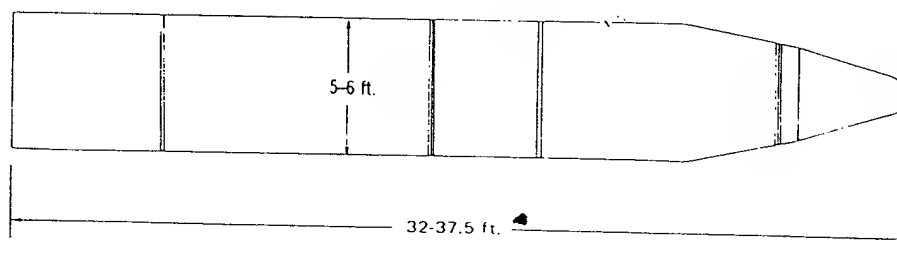
This new Polaris type submarine is being built at two shipyards under a high priority program. As of mid-1969, five Y class units were operational and four additional units had been launched. The production program is estimated at 35 to 50 units.

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Medium-Range Ballistic Missile

SS-N-6



IOC	1968
Configuration	single stage
Propellant	storable liquid
Launch weight	unknown
Re-entry vehicle	1,500 ± 500 lbs
Warhead (nuclear)	about 1,500 lbs
Maximum range	1,300 nm
Guidance	inertial
CEP	about 1 nm

Carried by the 16-tube Y class ballistic missile submarine. Launched submerged.

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Nuclear Powered Ballistic Missile Submarine - SSBN

H Class



Initial construction	1959
Number built	9
Complement	100
Length	380 ft
Beam	30 ft
Displacement,	
surfaced	4,100 tons
submerged	5,100 tons
Propulsion	nuclear (2 screws)
Operating depth,	
normal	1,000 ft
collapse	1,500 ft
Submerged speed, maximum	22 kt.
Patrol radius	
0 days on station	8,600 nm
20 days on station	5,800 nm
Patrol duration	60 days
Missiles	3 SS-N-5s in sail
Torpedoes	32

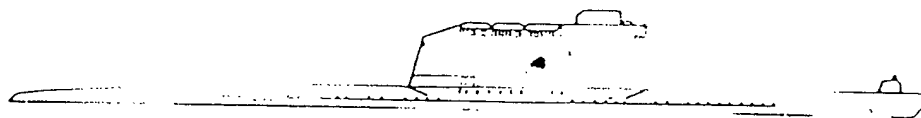
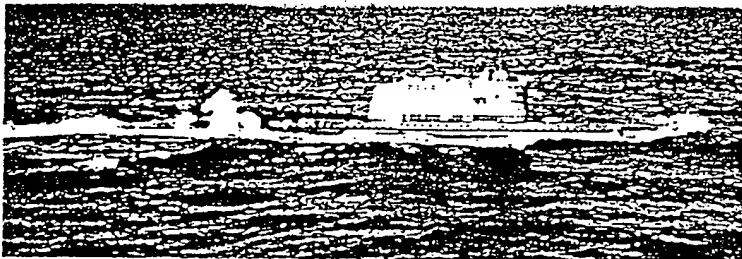
The eighth and last hull to be converted to fire the underwater-launched SS-N-5 now is undergoing this process. One of the nine units may have been converted to carry as many as six missiles of an undetermined type.

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Diesel Powered Ballistic Missile Submarine - SSB

G Class



Initial construction	1958
Number built	23
Complement	85
Length	320 ft
Beam	28 ft
Displacement,	
surfaced	2,300 tons
submerged	2,800 tons
Propulsion	diesel (3 screws)
Operating depth,	
normal	1,000 ft
collapse	1,500 ft
Submerged speed,	
maximum	16 kts for 12 nm
economical	3 kts for 250 nm
Patrol radius	
0 days on station	3,600 nm
20 days on station	2,400 nm
Patrol duration	60 days
Missiles	3 SS-N-4s or SS-N-5s
	in sail
Torpedoes	26

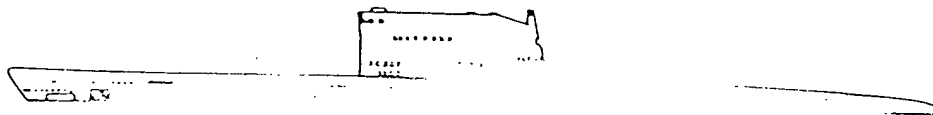
Eight units of this class have been converted to fire the underwater-launched SS-N-5, and four others are being converted. One unit was lost in the Pacific in 1968.

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Diesel Powered Ballistic Missile Submarine - SSB

Z-Conversion Class



Initial conversion	1955
Converted	6
Length	80
Beam	295 ft
Displacement, surfaced	26 ft
submerged	2,000 tons
Propulsion	2,400 tons
Operating depth, normal	diesel (3 screws)
collapse	750 ft
Submerged speed, maximum	1,100 ft
economical	15 kts for 15 nm
Patrol radius	3 kts for 250
0 days on station	3,600 nm
20 days on station	2,400 nm
Patrol duration	60 days
Missiles	2 SS-N-4s
Torpedoes	26

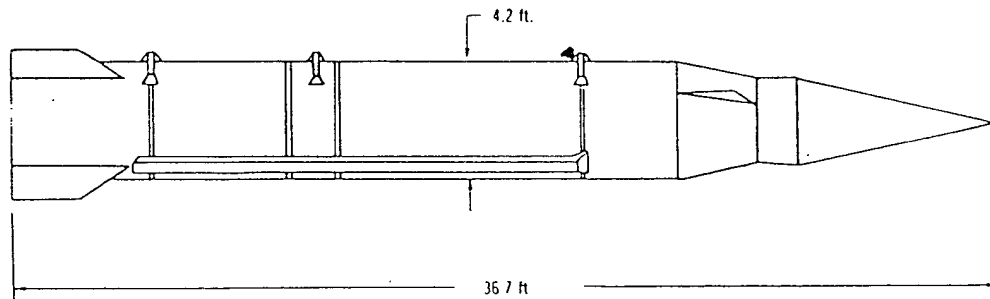
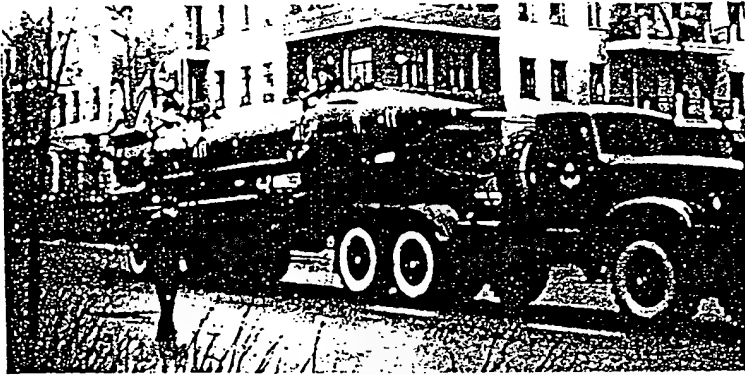
Conversion of the Z class was the initial Soviet effort to equip a submarine with ballistic missiles. One unit of this class has had its missile tubes removed and been reconverted to a torpedo attack submarine.

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Short-Range Ballistic Missile

SS-N-4



IOC	1960
Configuration	single stage
Propellant	storable liquid
Launch weight	25,300 lbs
Re-entry vehicle	about 2,700 lbs
Warhead (nuclear)	about 2,200 lbs
Maximum range	350 nm
Guidance	inertial
CEP	1-2 nm

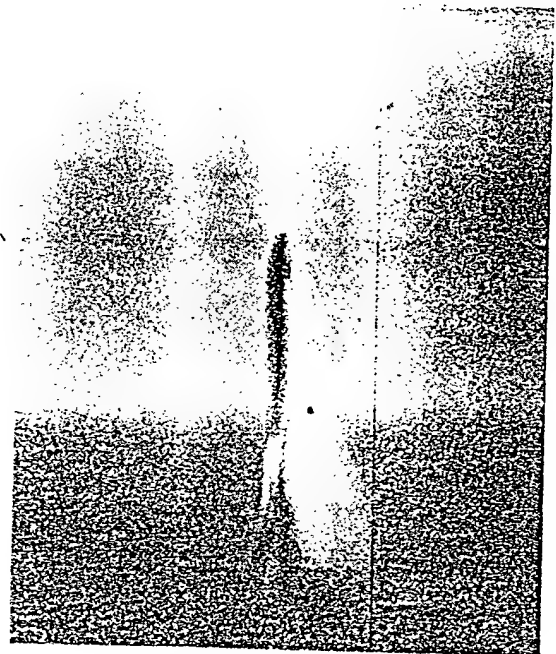
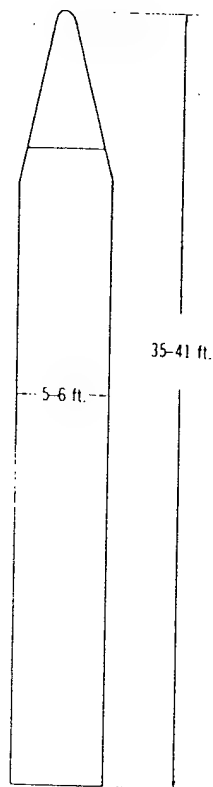
Launched from G-I and converted Z class submarines. Submarine surfaces prior to launch. Was also launched from H-I class submarines. First confirmed public appearance in Murmansk parade in November 1967. May have been shown on Soviet-East European TV and movies since 1965.

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Medium-Range Ballistic Missile

SS-N-5



(Possible SS-N-5)

IOC	1963
Configuration	single stage
Propellant	storable liquid
Launch weight	39,000 lbs
Re-entry vehicle	2,800 ± 500 lbs
Warhead (nuclear)	2,200 ± 500 lbs
Maximum range	700 nm
Guidance	inertial
CEP	1-2 nm

Launched submerged from G-II and H-II class submarines.

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Nuclear Powered Cruise Missile Submarine - SSGN

E-II Class



Initial construction	1962
Number built	28
Complement	100
Length	385 ft
Beam	30 ft
Displacement,	
surfaced	4,200 tons
submerged	5,200 tons
Propulsion	nuclear (2 screws)
Operating depth,	
normal	1,300 ft
collapse	2,000 ft
Submerged speed, maximum	23 kts
Patrol radius	
0 days on station	8,600 nm
20 days on station	5,800 nm
Patrol duration	60 days
Missiles	8 SS-N-3s
Torpedoes	22

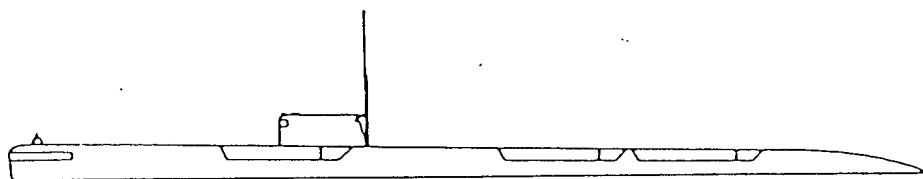
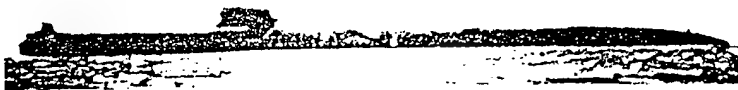
This class was built in Northern and Pacific Fleet shipyards.

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Nuclear Powered Cruise Missile Submarine - SSGN

E-I Class



Missile launching tubes in stowed position



Missile launching tubes in elevated position

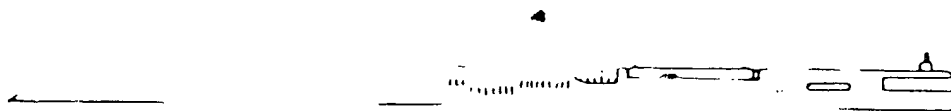
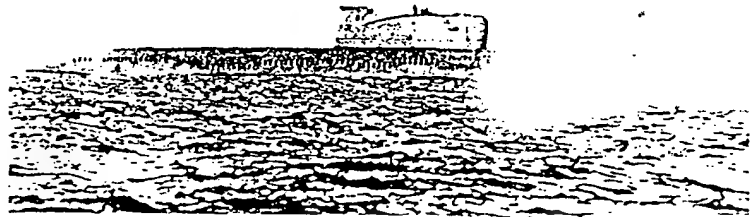
Initial construction	1960
Number built	5
Complement	100
Length	375 ft
Beam	30 ft
Displacement,	
surfaced	4,000 tons
submerged	5,000 tons
Propulsion	nuclear (2 screws,
Operating depth,	
normal	1,000 ft
collapse	1,500 ft
Submerged speed, maximum	24 kts
Patrol radius	
0 days on station	8,600 nm
20 days on station	5,800 nm
Patrol duration	60 days
Missiles	6 SS-N-3s
Torpedoes	22

All E-I class submarines were built in Pacific Fleet shipyards.

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Diesel Powered Cruise Missile Submarine - SSG

J Class



Initial construction	1962
Number built	16
Complement	80
Length	280'
Beam	33
Displacement,	
surfaced	2,700 tons
submerged	3,500 tons
Propulsion	diesel (2 screws)
Operating depth,	
normal	1,300 ft
collapse	2,000 ft
Submerged speed,	
maximum	14 kts for 14 nm
economical	2.8 kts for 300 nm
Patrol radius	
0 days on station	3,600 nm
20 days on station	2,400 nm
Patrol duration	60 days
Missiles	4 SS-N-3s
Torpedoes	22

Construction of this class has ended.

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Diesel Powered Cruise Missile Submarine - SSG

W-Conversion Class ("Long Bin")



Initial construction	19
Number built	
Complement	60
Length	275 ft
Beam	23 ft
Displacement,	
surfaced	1,200 tons
submerged	1,500 tons
Propulsion	diesel (?)
Operating depth,	
normal	300 ft
collapse	984 ft
Submerged speed,	
maximum	12 kts for 12 nm
economical	2.5 kts for 300 nm
Patrol radius	
0 days on station	2,400 nm
20 days on station	1,200 nm
Patrol duration	40 days
Missiles	4 SS-N-3s
Torpedoes	10

Basically a W class hull with a 25-ft section added,
a new sail, and four missile launchers.

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Diesel Powered Cruise Missile Submarine - SSG

W-Conversion Class
("Twin Cylinder")



Initial construction	1961
Number converted	5
Complement	56
Length	249 ft
Beam	23 ft
Displacement,	
surfaced	1,100 tons
submerged	1,400 tons
Propulsion	diesel (2 screws)
Operating depth,	
normal	656 ft
collapse	984 ft
Submerged speed,	
maximum	12 kts for 12 nm
economical	2.5 kts for 250 nm
Patrol radius	
0 days on station	2,400 nm
20 days on station	1,200 nm
Patrol duration	40 days
Missiles	2 SS-N-3s
Torpedoes	12

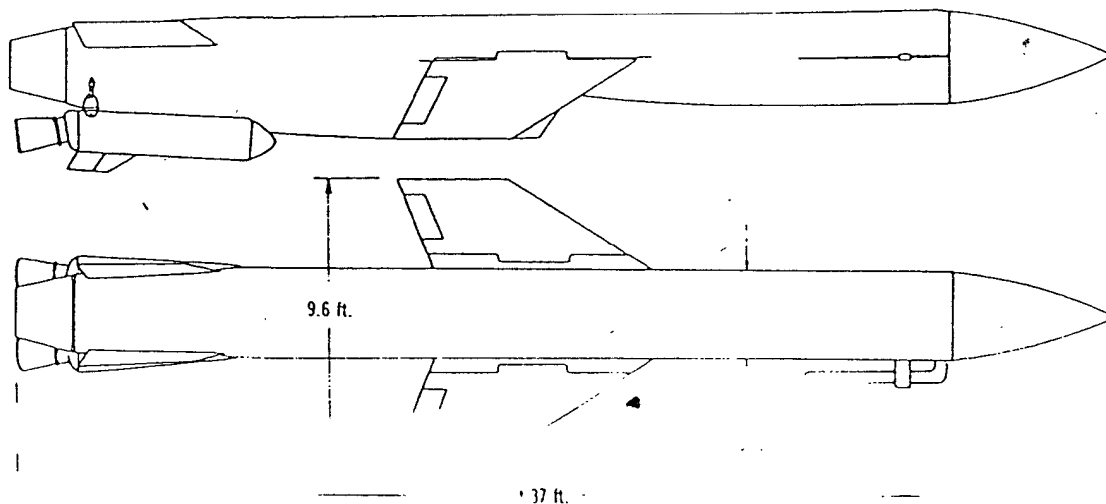
Standard W class fitted with two missile launchers
aft of the sail.

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Naval Cruise Missile

SS-N-3



IOC	1961
Propulsion	rocket-boosted turbojet
Launch weight	10,000 lbs
Warhead (HE, chemical, nuclear)	1,000-2,000 lbs
Maximum range	250 nm
Cruising altitude	1,000-3,000 ft
Cruising speed	Mach 0.9-1.6
Guidance	preset autopilot/command override/terminal homing

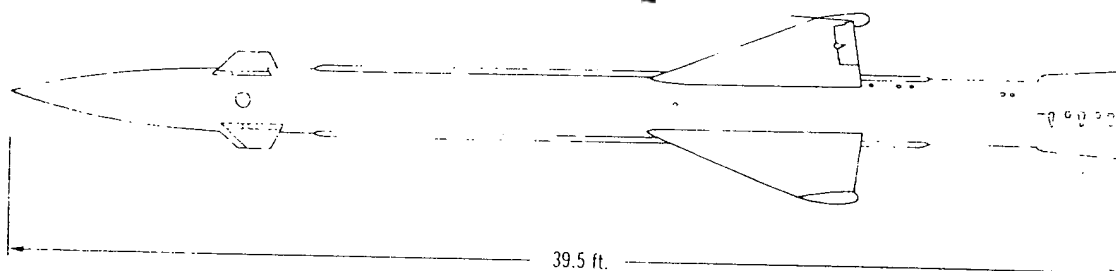
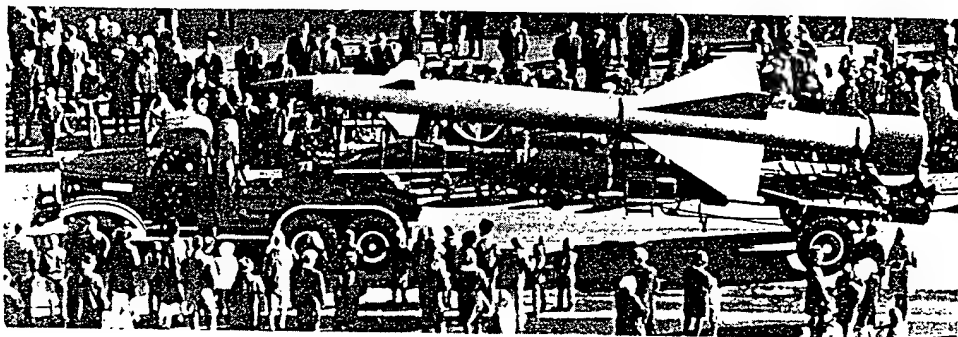
Carried by diesel powered J and modified W class submarines, nuclear powered E-I and E-II submarines, and Kynda and Kresta class cruisers. Submarines must surface to launch.

In primary role as antiship missile, maximum operational range is 250 nm when launched from submarine and 150 nm from surface ship. This weapon could also be used against land targets.

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Surface-to-Air Missile

SA-1 Guild



IOC	1954
Propulsion	single-stage liquid
Warhead (HE or nuclear)	465 lbs
Maximum operational range	18-24 nm
Effective altitude,	
maximum	60,000-80,000 ft
minimum	3,500 ft
Speed	Mach 3
Guidance	command
CEP	100-200 ft

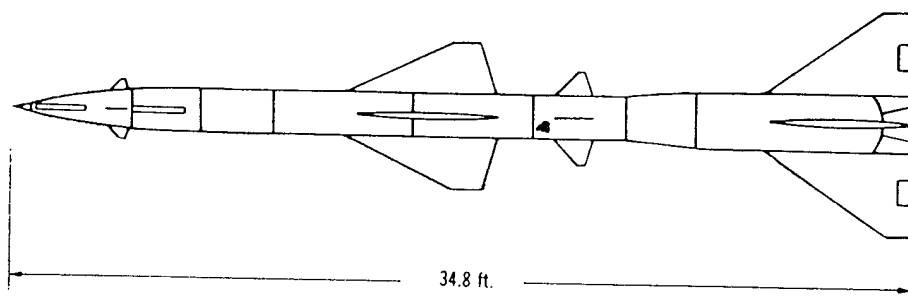
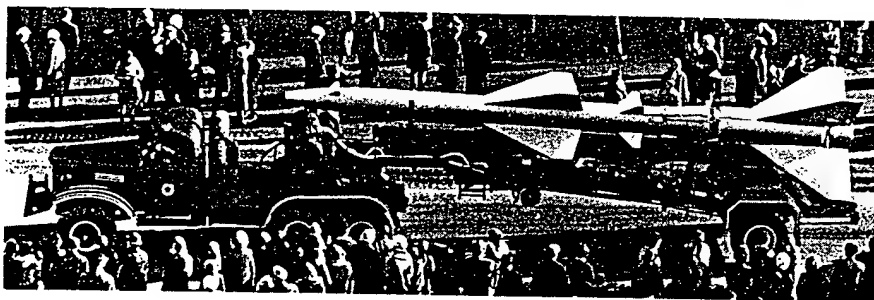
Introduced in 1954 as part of fixed Moscow area defenses. Not deployed elsewhere.

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Surface-to-Air Missile

SA-2 Guideline Mod 1, 2



IOC	Mod 1 1959, Mod 2 1960
Propulsion	solid booster, liquid sustainer
Warhead (HE)	420 lbs
Maximum operational range	Mod 1 19 nm Mod 2 24 nm
Effective altitude,	
maximum	80,000-90,000 ft
minimum	Mod 1 1,500 ft Mod 2 1,000 ft
Speed	about Mach 4
Guidance	command
CEP	75-100 ft

No external features have been identified to distinguish Mod 1 from Mod 2. Mod 1 is employed with Fan Song B S-band radar, Mod 2 with Fan Song C C-band radar.

Mod 1 no longer operational in USSR. Exported to Warsaw Pact and many other countries.

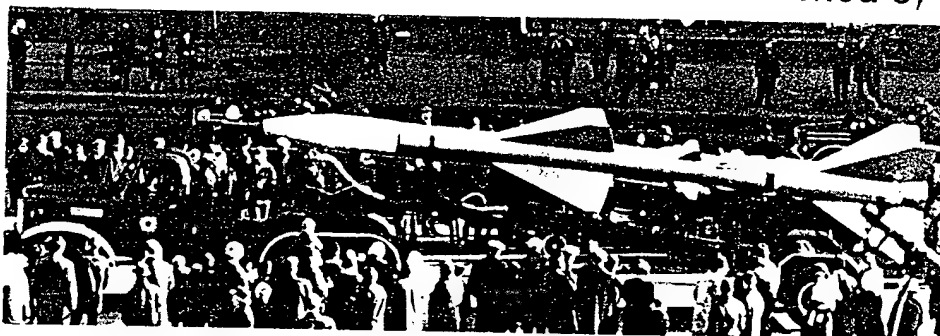
Mod 2 still operational in USSR.

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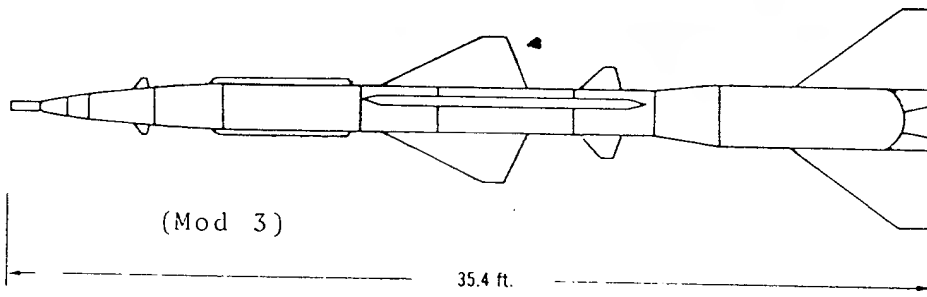
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Surface-to-Air Missile

SA-2 Guideline Mod 3, 4



(Mod 4)



IOC	Mod 3 1962, Mod 4 1966
Propulsion	solid booster, liquid sustainer
Warhead (Mod 3 HE, Mod 4 nuclear)	about 420 lbs
Maximum operational range	27 nm
Effective altitude,	
maximum	90,000 ft
minimum	1,000 ft
Speed	about Mach 4
Guidance	command
CEP	about 50 ft

Primary weapon of Soviet SAM forces. Employed with Fan Song E C-band radar.

Mod 3 exported to most Warsaw Pact countries and Yugoslavia. Also deployed with Soviet forces in Eastern Europe and Mongolia.

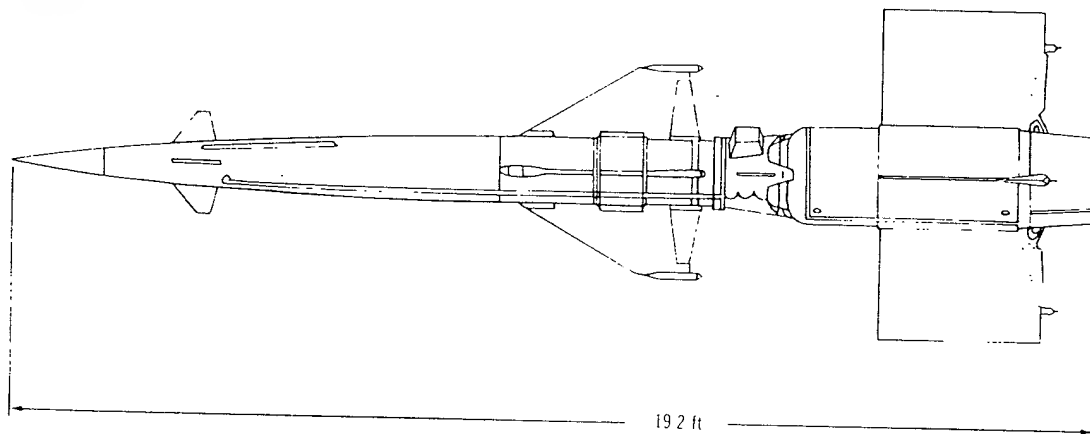
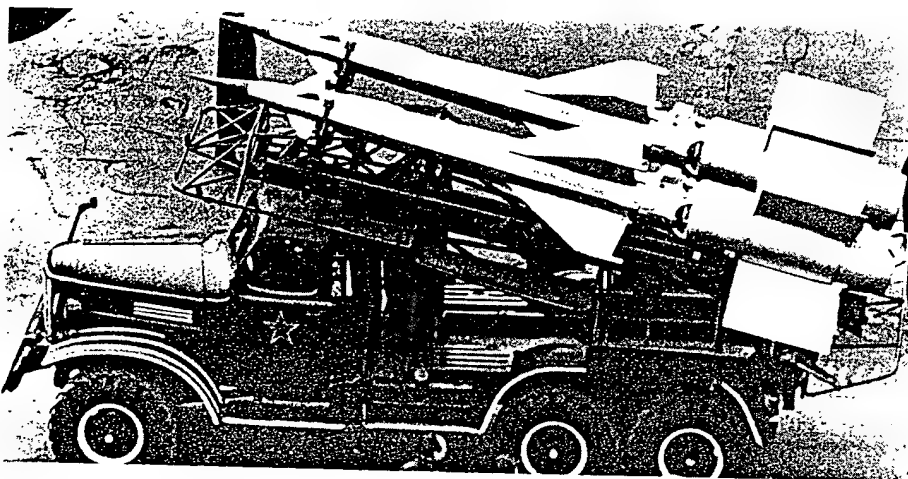
Mod 4 first displayed in November 1967. Probably deployed only in USSR.

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Surface-to-Air Missile

SA-3 Goa



IOC	1961
Propulsion	solid booster & sustainer
Warhead (HE)	140 lbs
Maximum operational range	about 13 nm
Effective altitude,	
maximum	about 50,000 ft
minimum	about 500 ft
Speed	Mach 2.5
Guidance	command
CEP	about 30 ft

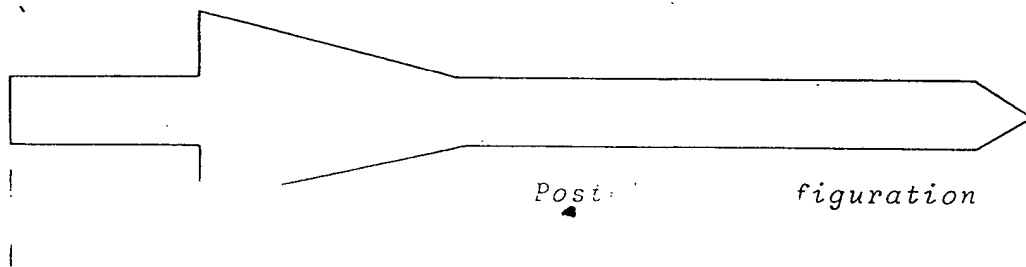
Deployed around Moscow and Leningrad, and in many border areas of USSR. Deployment is continuing. Also deployed at Soviet tactical airfields in East Germany, Poland, and Hungary.

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Long-Range Surface-to-Air Missile

SA-5 Gammon



IOC	1967
Propulsion	solid booster, liquid sustainer
Warhead (HE)	700-750 lbs
Maximum operational range	50-100 nm
Effective altitude,	
maximum	110,000 ft
minimum	unknown
Speed	Mach 4.5
Guidance	command/terminal homing
CEP	100 ft

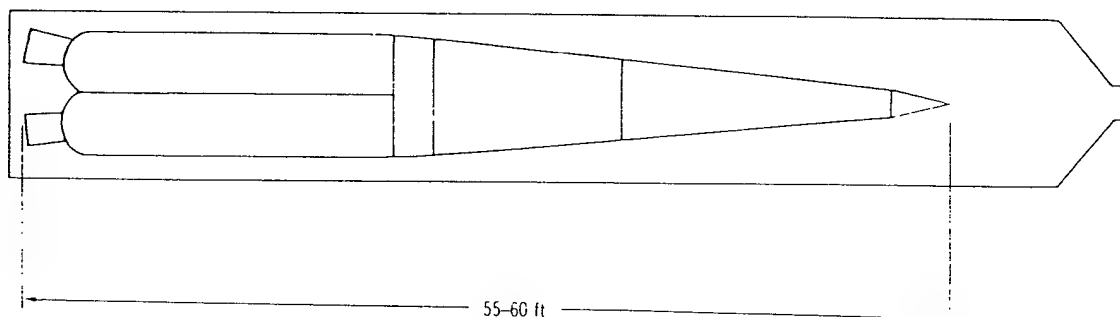
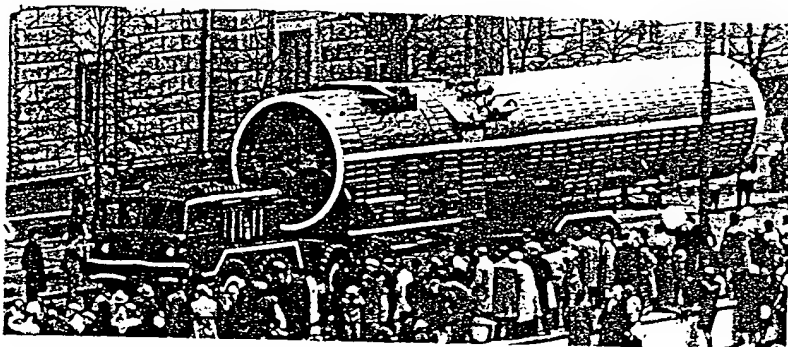
Designed to defend against medium and high altitude aircraft and standoff weapons. Deployed extensively throughout USSR. Never publicly displayed.

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ABM Missile

ABM-1 Galosh



IOC	1968
Propulsion	solid booster with probable liquid sustainer/ terminal propulsion stage
Warhead (nuclear)	2,000-3,000 lbs
Maximum operational range	350 nm
Effective altitude,	
maximum	200-300 nm
minimum	50,000 ft
Speed	11,500-14,500 ft per second
Guidance	probably command type using small Try Add radars

Deployment limited to Moscow area. Estimated to provide limited defense capability against ballistic missile attack.

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Strategic Bomber

TU-16 Badger



Engines	2, jet
Span	108 ft
Length	119 ft
Radius	1,650 nm
Maximum speed	540 kts
Cruise speed	445 kts
Combat ceiling	44,800 ft
Crew	5-6
Bomb capacity	20,000 lbs
Normal bomb load	6,600 lbs

Variant (and year entered service)

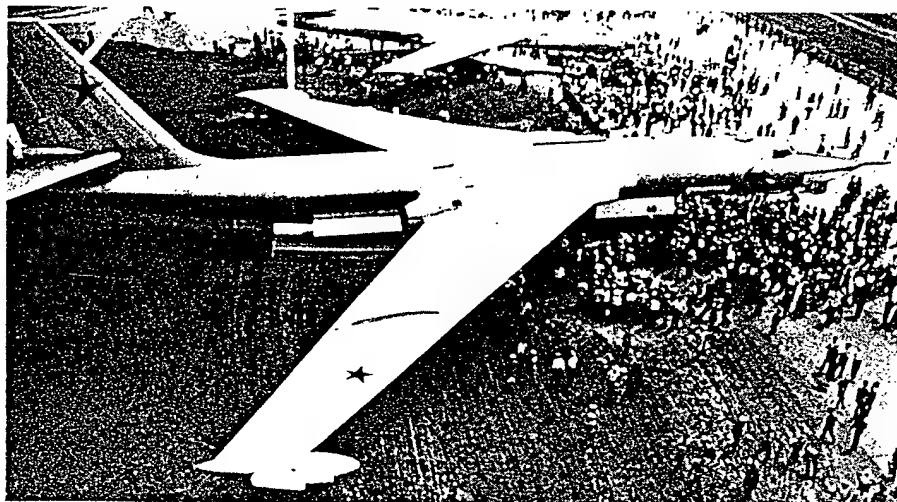
Badger A (1956)	Strategic medium bomber and tanker in service with Soviet long range, naval, and air defense air forces.
Badger B (1957)	Converted to carry two AS-1 Kennel air-to-surface missiles.
Badger C (1960)	Converted to carry one AS-2 Kipper air-to-surface missile.
Badger D (1964)	Electronic reconnaissance aircraft.
Badger E (1963)	Photographic reconnaissance aircraft.
Badger F (1963)	Electronic and photographic reconnaissance aircraft.
Badger G (1965-66)	Converted to carry two AS-5 Kelt air-to-surface missiles.

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Strategic Bomber

M- Bison



Engines	4, jet
Span	170 ft
Length	160 ft
Radius	3,050 nm
Maximum speed	545 kts
Cruise speed	445 kts
Combat ceiling	47,100 ft
Crew	8
Bomb capacity	30,800 lbs
Normal bomb load	10,000 lbs

Variant (and year entered service)

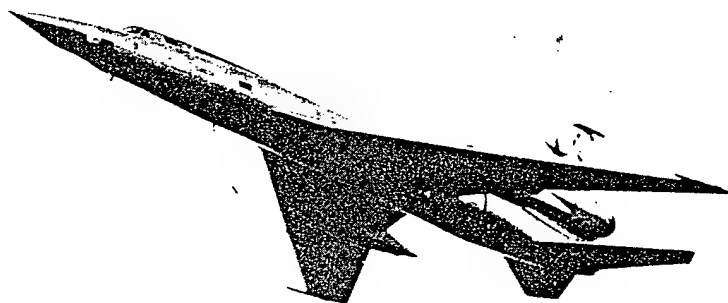
Bison A (1955)	Soviet long range air force strategic heavy bomber and aerial tanker.
Bison B (1957)	Increased fuel load, improved engines and radar.
Bison C (1960)	Slight structural modifications.

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Strategic Bomber

TU-22 Blinder



Engines	2, afterburning jet
Span	78 ft
Length	131 ft
Radius	1,800 nm
Maximum speed	975 kts
Cruise speed	515 kts
Combat ceiling	53,100 ft
Crew	3
Bomb capacity	20,000 lbs
Normal bomb load	6,600 lbs

Variant (and year entered service)

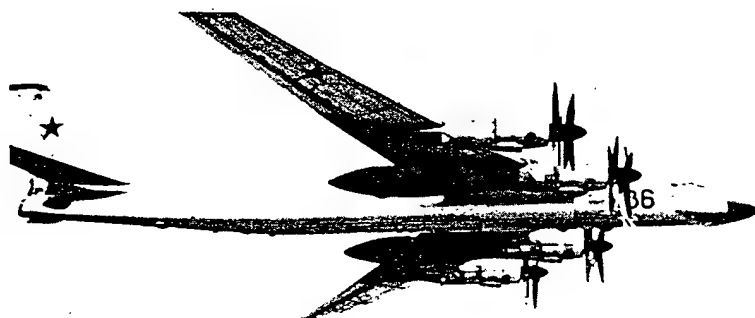
Blinder A (1962)	Supersonic medium bomber of the Soviet long range and naval air forces.
Blinder B (1967)	Modified to carry one AS-4 Kitchen air-to-surface missile.
Blinder C (1966)	Electronic reconnaissance aircraft.

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Strategic Bomber

TU-95 Bear



Engines	4, turboprop with counterrotating propellers
Span	165 ft
Length	147 ft
Radius	4,500 nm
Maximum speed	500 kts
Cruise speed	435 kts
Combat ceiling	41,100 ft
Crew	8
Bomb capacity	30,000 lbs
Normal bomb load	10,000 lbs

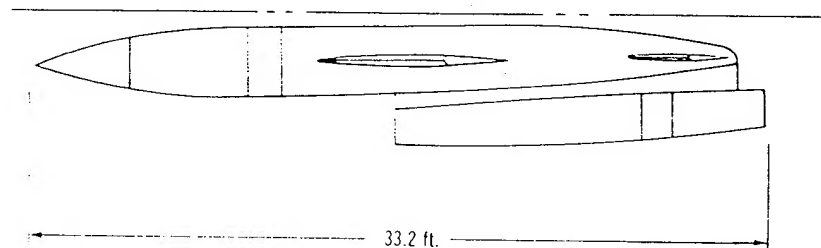
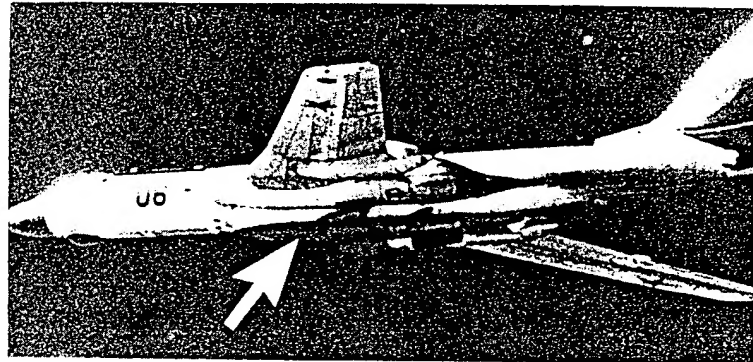
Variant (and year entered service)

Bear A (1956)	Strategic heavy bomber of the Soviet long range air forces.
Bear B (1960)	Modified to carry one AS-3 Kangaroo air-to-surface missile.
Bear C (1962)	Same as B model but with additional electronic equipment.
Bear D (1965)	Electronic reconnaissance aircraft of the Soviet naval air forces.
Bear E (1965)	Photographic reconnaissance aircraft.

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Air-to-Surface Missile

AS-2 Kipper



IOC	1960-61
Propulsion	turbojet
Launch weight	9,100 lbs
Warhead (HE, nuclear)	2,200 lbs
Range	110 nm
Launch speed, at 36,000 ft	Mach .8
Maximum cruise speed,	
high altitude	Mach 1.7
low altitude	Mach 1.2
Guidance	autopilot with command override/terminal homing
CEP, against ships	150 ft
against land targets	1-2 nm
Carrier:load	TU-16 Badger C : one

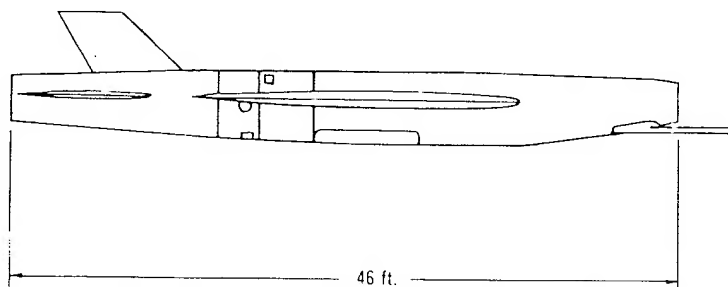
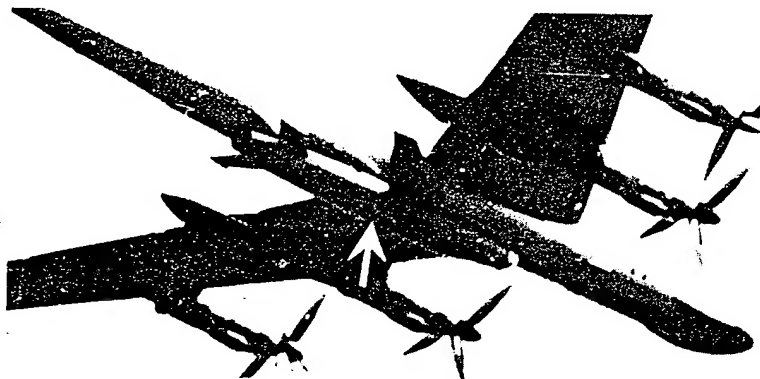
Used only by Soviet naval air forces, primarily in antiship role.

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Air-to-Surface Missile

AS-3 Kangaroo



IOC	1960-61
Propulsion	turbojet
Launch weight	25,000 lbs
Warhead (nuclear)	4,500-5,500 lbs
Maximum range	275-350 nm
Speed	Mach 1.8-2.0
Guidance	autopilot with command override
CEP	1-3 nm
Carrier:load	TU-95 Bear B,C : one

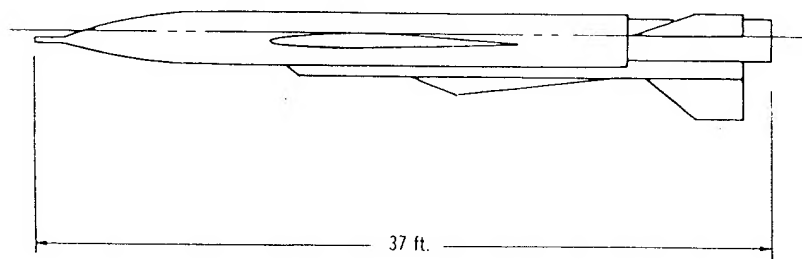
Designed as standoff weapon for strategic attack
against large land targets.

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Air-to-Surface Missile

AS-4 Kitchen



IOC	1968
Propulsion	liquid rocket
Launch weight	14,000 lbs
Warhead (HE, nuclear)	2,200 lbs
Range, against ships	230 nm
against land targets	300 nm
Speed	Mach 3.5
Guidance	unknown
CEP	1-2 nm
Carrier:load	TU-22 Blinder B : one

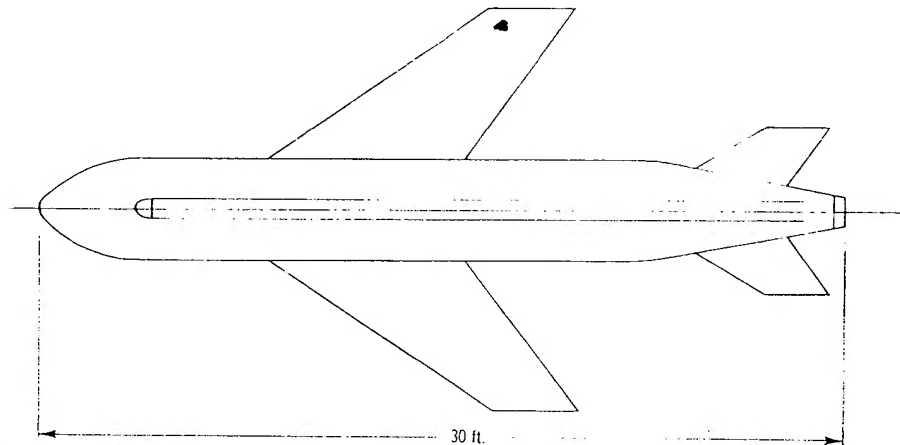
Apparently designed for use against land and ship targets.

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Air-to-Surface Missile

AS-5 Kelt



IOC	1963-65
Propulsion	liquid-fuel rocket
Launch weight	about 6,000 lbs
Warhead (HE, nuclear)	1,000-2,000 lbs
Range	80-120 nm
Speed	Mach .9-1.2
Guidance	unknown, possibly preset autopilot with command override/possibly terminal homing in antiship role
CEP, against land targets	1-2 nm
against ships	150 ft
Carrier:load	TU-16 Badger G : two

Launch occurs at altitude of 30,000-35,000 feet at about 440 knots. Began to replace AS-1 about 1963. Has extended the useful life of TU-16 Badger B.